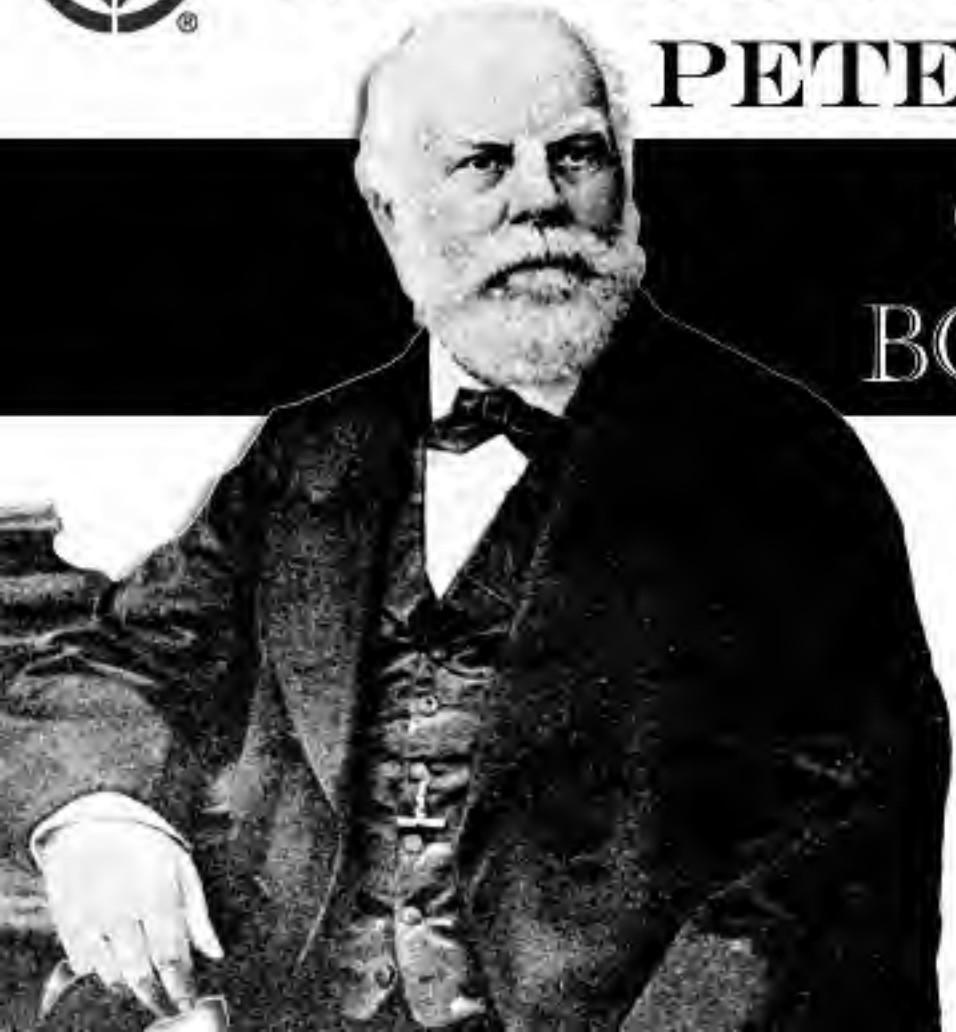




# MISSOURI BOTANICAL GARDEN

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## GEORGE ENGELMANN BOTANICAL NOTEBOOKS

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	Jan.	Feb.	Mar.	Ap <sup>l</sup> .	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1861	32.2	40.4	44.8	58.1	64.1	76.9	77.5	78.6	69.1	57.9	46.0	39.7	57.1° F.
1862	28.9	30.2	43.2	55.0	69.7	75.1	81.2	80.7	72.1	57.3	42.6	41.3	56.4° F.

## RELATIVE HUMIDITY.

	Jan.	Feb.	Mar.	Ap <sup>l</sup> .	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1861	72.2	63.3	64.5	61.5	66.3	70.8	66.3	69.6	77.3	76.6	69.0	74.3	69.5
1862	85.3	73.9	70.8	67.0	57.3	67.0	66.8	64.3	74.2	67.2	69.5	74.6	69.8

III. Yearly mean of Positive Electricity of Temperature, and of Relative Humidity of the Atmosphere, at the hours of 6, 9, 12, 3, 6 and 9, from morning till night, based upon daily observations at these hours through the years 1861 and 1862, at St. Louis, Mo.

## ELECTRICITY.

	At 6 A.M.	At 9 A.M.	At 12 M.	At 3 P.M.	At 6 P.M.	At 9 P.M.
1861	8.6	10.0	9.2	9.2	7.9	8.7
1862	8.9	10.0	9.1	9.1	7.3	8.1

## TEMPERATURE.

1861	48.9° F...	54.9	61.6	63.6	59.3	54.3
1862	48.9	55.0	60.9	62.3	58.0	53.6

## RELATIVE HUMIDITY.

1861	86.4	71.3	60.3	57.2	65.1	77.3
1862	85.3	70.6	60.0	57.5	67.6	78.0

270-1

81  
*J. bulbosus* Lin  
*Congressus* Jarg. Wind. 60.



0 1 2 3 4 5 6 7 8 9 10  
cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

9220

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

	Electricity.		Electricity.		Electricity.	
	1861.	1862.	1861.	1862.	1861.	1862.
Jan.....	179	179	3	5	2	40°
Feb.....	162	166	6	2	34	33
March ...	168	179	15	8	30	48
April ...	157	157	12	22	33	52
May .....	171	180	17	5	25	32
June ...	162	143	5	2	16	21
July....	183	153	3	8	20	11
August ..	176	143	5	1	24	14
Sept.....	169	117	1	6	40	15
Oct.....	162	143	4	1	10	19
Nov.....	172	157	2	3	61	23
Dec.....	175	166	5	7	20	33
	2046	1883	78	67	59	35
					225	42°
						52°



0 1 2 3 4 5 6 7 8 9 10  
cm

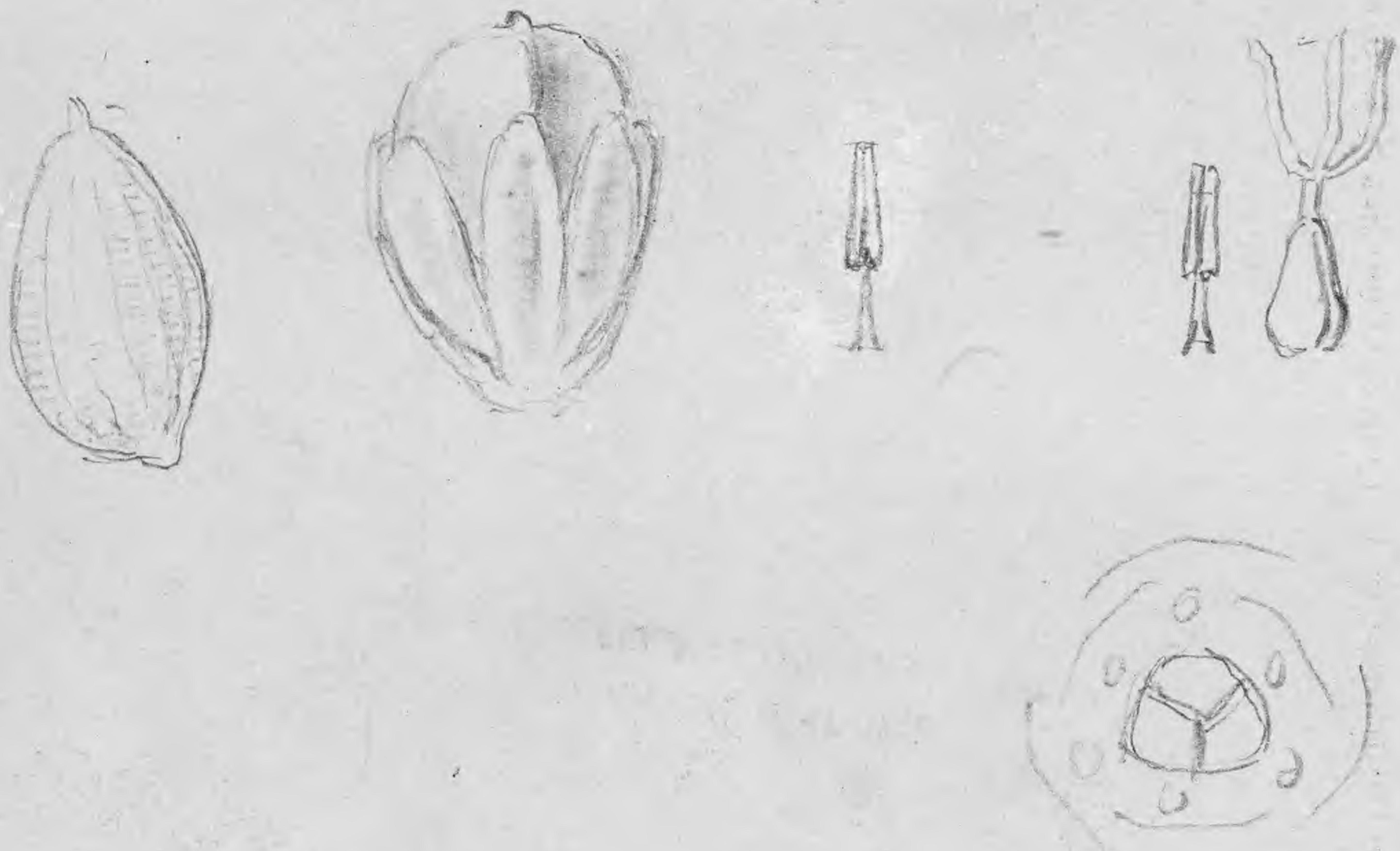
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MISSOURI  
BOTANICAL  
GARDEN

*Inonotus belbosus*  
France

Aug 15 1865



0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI  
BOTANICAL  
GARDEN

ALEX. LEITCH,  
APOTHECARY & PHARMACEUTIST,  
Marble Building Cor. Fourth & Olive Sts. S<sup>r</sup>. Louis, Mo.

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

1886



0 1 2 3 4 5 6 7 8 9 10

cm

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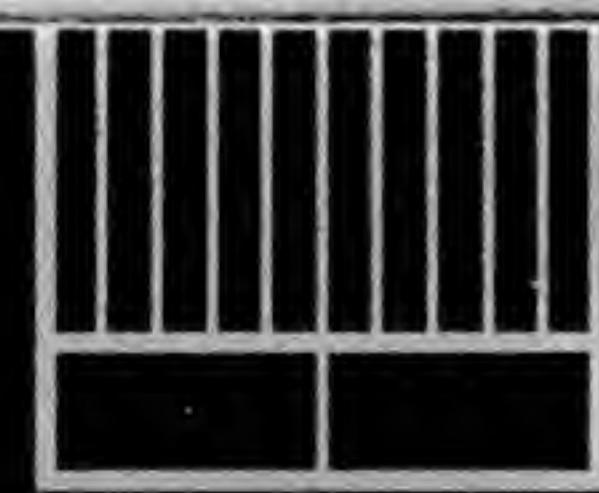
MISSOURI  
BOTANICAL  
GARDEN

*I. bulbosa*

1765



Bentley 1824



0 1 2 3 4 5 6 7 8 9 10

cm

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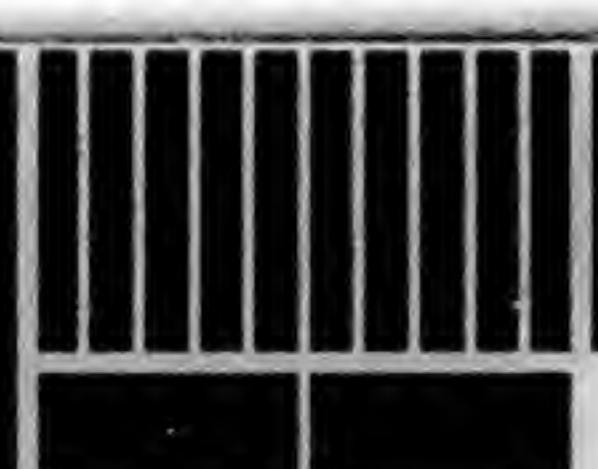
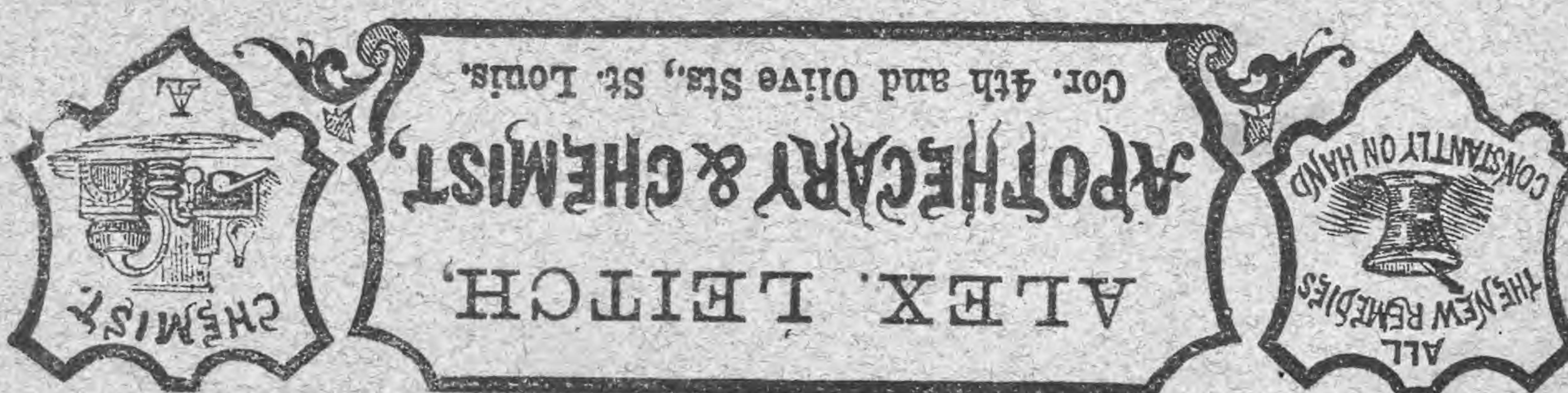


MISSOURI  
BOTANICAL  
GARDEN

DR. ENGELMANN PH.D.

BOTANICAL GARDEN

474-3-474



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

*J. Chamissons 11th*

En. III. 248

273

TEMPERATURE.												Mean of Year.
Jan.	Feb.	Mar.	Ap'l.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1861...32.2	40.4	44.8	58.1	64.1	76.9	77.5	78.6	69.1	57.9	46.0	39.7	57.1° F.
1862...28.9	30.2	43.2	55.0	69.7	75.1	81.2	80.7	72.1	57.3	42.6	41.3	56.4° F.

RELATIVE HUMIDITY.

RELATIVE HUMIDITY.												Mean of Year.
Jan.	Feb.	Mar.	Ap'l.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1861...72.2	63.3	64.5	61.5	66.3	70.8	66.3	69.6	77.3	76.6	69.0	74.3	69.5
1862...85.3	73.9	70.8	67.0	57.3	67.0	66.8	64.3	74.2	67.2	69.5	74.6	69.8

III. Yearly mean of Positive Electricity of Temperature, and of Relative Humidity of the Atmosphere, at the hours of 6, 9, 12, 3, 6 and 9, from morning till night, based upon daily observations at these hours through the years 1861 and 1862, at St. Louis, Mo.

ELECTRICITY.

ELECTRICITY.												At 6 A.M.	At 9 A.M.	At 12 M.	At 3 P.M.	At 6 P.M.	At 9 P.M.
1861	.....	8.6	.....	10.0	.....	9.2	.....	7.9	.....	8.7	.....	6.9					
1862	.....	8.9	.....	10.0	.....	9.1	.....	7.3	.....	8.1	.....	6.8					

TEMPERATURE.

1861	.....	48.9° F...	54.9	.....	61.6	.....	63.6	.....	59.3	.....	54.3						
1862	.....	48.9	.....	55.0	.....	60.9	.....	62.3	.....	58.0	.....	53.6					
1861	.....	86.4	.....	71.3	.....	60.3	.....	57.2	.....	65.1	.....	77.3					
1862	.....	5.3	.....	70.6	.....	60.0	.....	57.5	.....	67.6	.....	78.0					



0  
cm

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MISSOURI  
BOTANICAL  
GARDEN

9223

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112191

V. Positive or Negative Electricity in the Observations of '61 & '62.

	Positive Electricity.		Negative Electricity.		No Electricity, or 0.		Highest Positive Electricity.	
	1861.	1862.	1861.	1862.	1861.	1862.	1861.	1862.
Jan.....	179	179	3	5			40°	40°
Feb.....	162	166	6	2			34	33
March....	168	179	15	8			30	48
April....	157	157	12	22			33	52
May.....	171	180	17	5	1	3	25	32
June....	162	143	5	2	1	8	20	16
July.....	183	153	3	8	1	24	14	11
August..	176	143	5	4	6	40	15	19
Sept.....	169	117	1	1	10	61	18	23.
Oct.....	162	143	4	3	20	41	33	35
Nov....	172	157	2	7	6	16	42	42
Dec....	175	166	5	0	6	17	37	35
	<b>2046</b>	<b>1883</b>	<b>78</b>	<b>67</b>	<b>59</b>	<b>225</b>	<b>42°</b>	<b>52°</b>



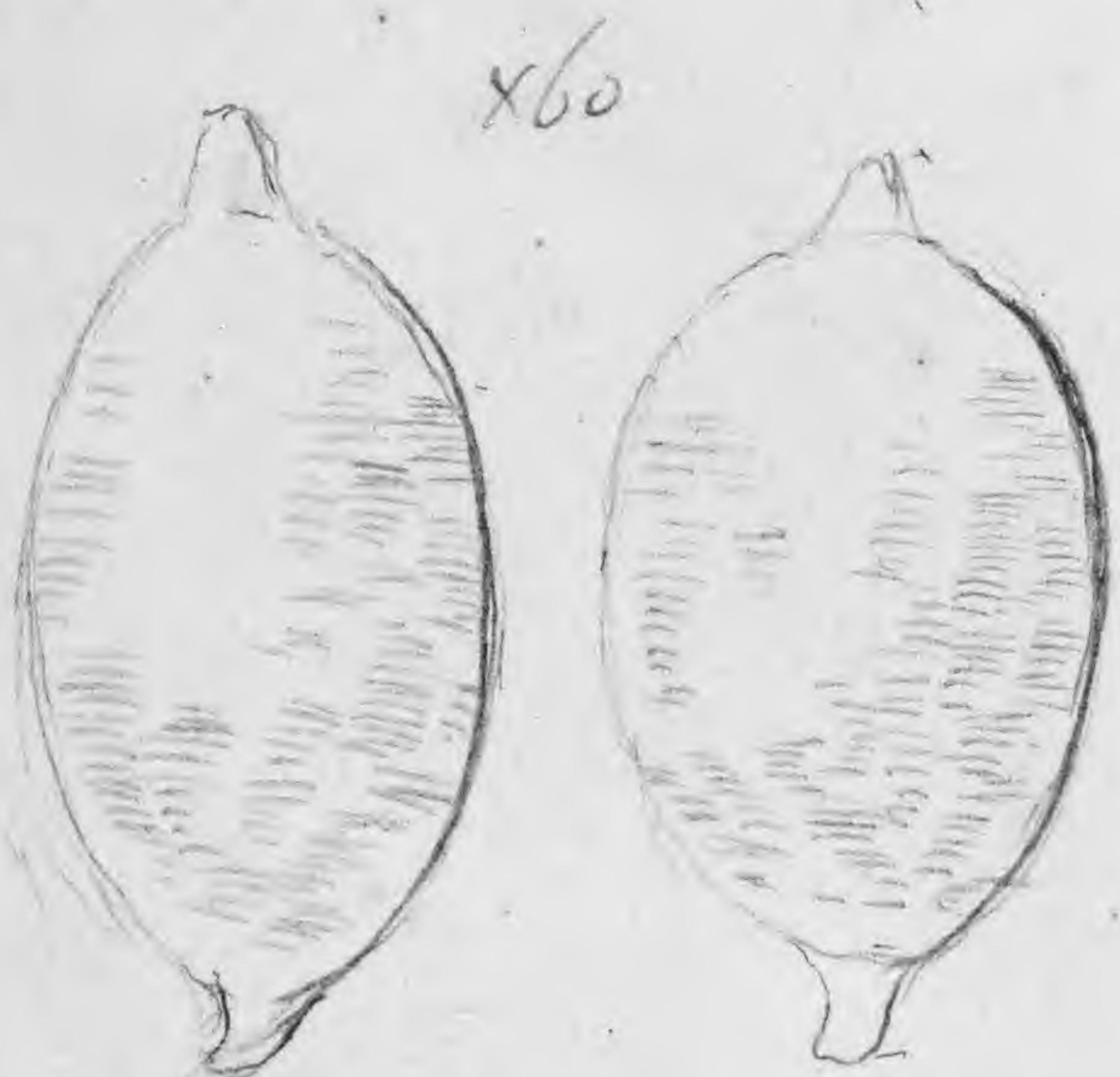
0 1 2 3 4 5 6 7 8 9 10  
cm

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MISSOURI  
BOTANICAL  
GARDEN

"*Tunca Chamissoi* Klt." Febr 6 1867  
Ex H.G. von Paris 1866



no distinct ribs visible  
circulations very delicate



x150



x10



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

Alex. Leitch,  
APOTHECARY & CHEMIST,

Cor. 4<sup>th</sup> & Olive Sts., St. Louis.

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

9224



0

1

2

3

4

5

6

7

8

9

10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

J. G. Johnson

274-283

	Jan.	Feb.	Mar.	Apr <sup>1</sup> .	May.	Jun.	Jul.	Aug.	Sep <sup>t</sup> .	Oct.	Nov.	Dec.	Mean of Year.
1861...	32.2	40.4	44.8	58.1	64.1	76.9	77.5	78.6	69.1	57.9	46.0	39.7	57.1° F.
1862...	28.9	30.2	43.2	55.0	69.7	75.1	81.2	80.7	72.1	57.3	42.6	41.3	56.4° F.

## RELATIVE HUMIDITY.

	Jan.	Feb.	Mar.	Apr <sup>1</sup> .	May.	Jun.	Jul.	Aug.	Sep <sup>t</sup> .	Oct.	Nov.	Dec.	Mean of Year.
1861...	72.2	63.3	64.5	61.5	66.3	70.8	66.3	69.6	77.3	76.6	69.0	74.3	69.5
1862...	85.3	73.9	70.8	67.0	57.3	67.0	66.8	64.3	74.2	67.2	69.5	74.6	69.8

III. *Yearly mean of Positive Electricity of Temperature, and of Relative Humidity of the Atmosphere, at the hours of 6, 9, 12, 3, 6 and 9, from morning till night, based upon daily observations at these hours through the years 1861 and 1862, at St. Louis, Mo.*

## ELECTRICITY.

	At 6 A.M.	At 9 A.M.	At 12 M.	At 3 P.M.	At 6 P.M.	At 9 P.M.
1861	8.6	10.0	9.2	7.9	8.7	6.9
1862	8.9	10.0	9.1	7.3	8.1	6.8

## TEMPERATURE.

1861	48.9° F...	54.9	61.6	63.6	59.3	54.3
1862	48.9	55.0	60.9	62.3	58.0	53.6

## RELATIVE HUMIDITY.

1861	86.4	71.3	60.3	57.2	65.1	77.3
1862	85.3	70.6	60.0	57.5	67.6	78.0



0 1 2 3 4 5 6 7 8 9 10  
cm

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MISSOURI  
BOTANICAL  
GARDEN

Positive & Negative  
Electricity in the Observations of '61 & '62.

	Positive Electricity.	Negative Electricity.	No Electricity, or 0.	Highest Positive Electricity.
	1861.	1862.	1861.	1862.
Jan.....	179	179	3	40°
Feb.....	162	166	6	34
March ...	168	179	5	30
April ...	157	157	12	25
May.....	171	180	22	33
June ...	162	143	5	52
July.....	183	153	3	48
August..	176	143	8	32
Sept.....	169	117	4	20
Oct.....	162	143	1	16
Nov.....	172	157	1	14
Dec.....	175	166	1	11
	2046	1883	78	19
			67	23
			59	35
			225	35
			42°	52°

9225

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS



0 1 2 3 4 5 6 7 8 9 10  
cm

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MISSOURI  
BOTANICAL  
GARDEN

*Ionurus biflorus*

Aug 15 1865

x60



x10

Banff 1824



filament  
twice as long  
as anther



0 1 2 3 4 5 6 7 8 9 10

cm

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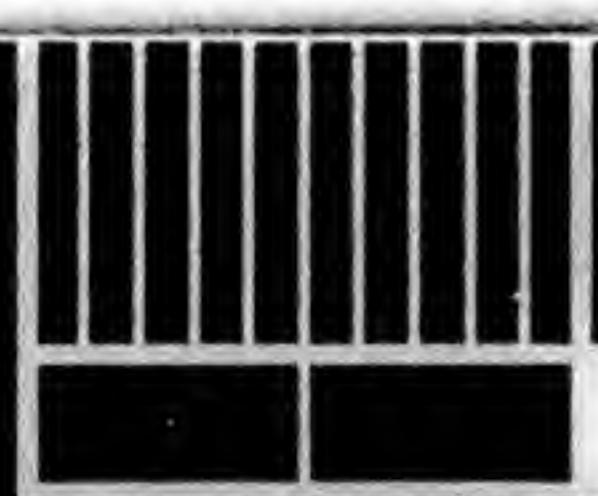


MISSOURI  
BOTANICAL  
GARDEN

9226

( ALEX. LEITCH ))  
APOTHECARY & PHARMACEUTIST,

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.



0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI  
BOTANICAL  
GARDEN

*Linum leptocephalum* Aug 15 1865  
Colomb., Hall. 557



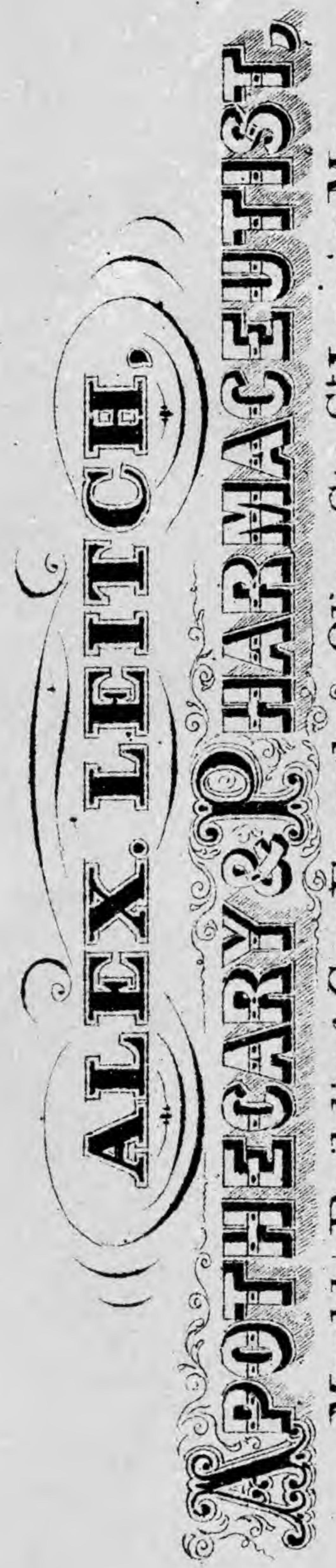
0 1 2 3 4 5 6 7 8 9 10

cm

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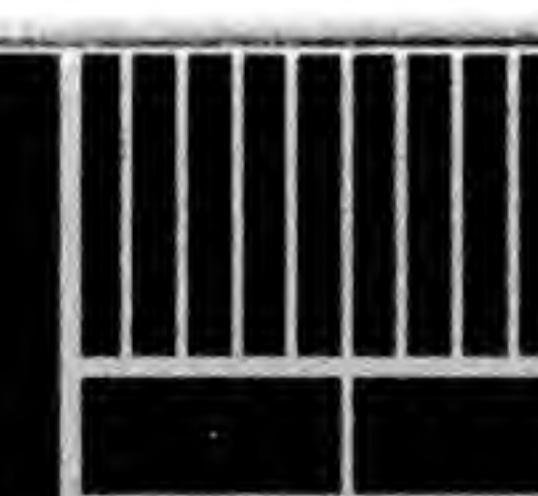


MISSOURI  
BOTANICAL  
GARDEN



Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

MISSOURI BOTANICAL GARDEN  
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0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI  
BOTANICAL  
GARDEN

*Tanacetum bipinnatum*

Aug 16/86

Pelargonium Linn'

x60



seed

scarcely marked



x10



0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI  
BOTANICAL  
GARDEN

ALEX. LEITCH.

APOTHECARY & PHARMACEUTIST

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

8cc6

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS



0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI  
BOTANICAL  
GARDEN

*J. bufonis*

x60



Mendocino

11

seed with

20-40

diaphragms

ross - linear = 0.33 - 0.45

usually 0.38. mm

60

20 - 27 mm. 23

VIOLESCENS & HERBACEUS long

inner sepals acute  
not much shorter than  
the outer ones, much longer than the  
retuse capsule.

HERBARIUM JUNCORUM BOREALI-AMERICANORUM NORMALE,

ed. G. Engelmann, St. Louis, Missouri, 1866.

28. *JUNCUS BUFONIUS*, LIN.

*Forma erecta sepalis subæqualibus capsulam retusam longe superantibus.*

In gravelly soil, margin of pools near Mendocino City, California,  
with shrubby *Pinus contorta*.

H. BOLANDER leg. Mai. 1866.



0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI  
BOTANICAL  
GARDEN

92296

92293

92294



0 1 2 3 4 5 6 7 8 9 10

cm

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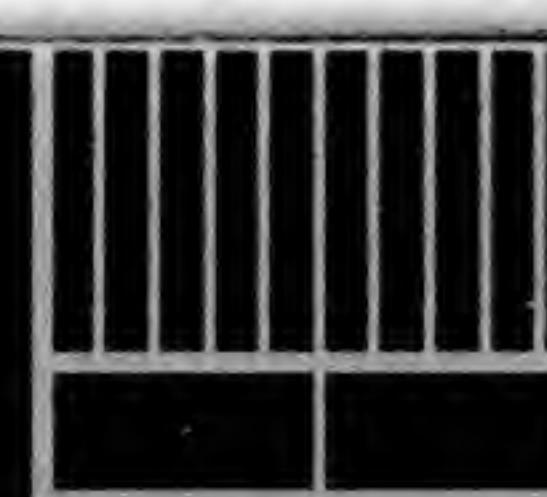
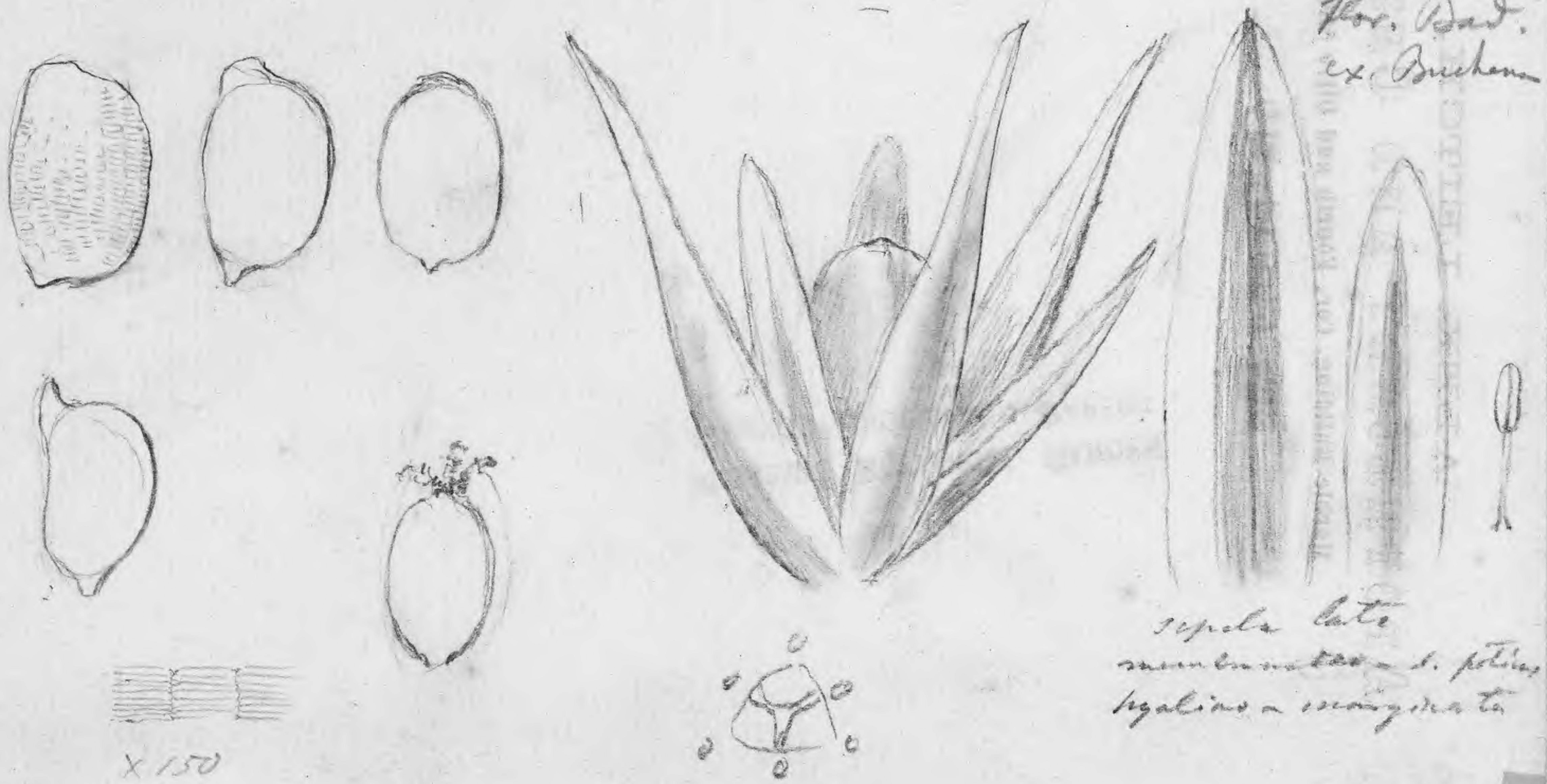


MISSOURI  
BOTANICAL  
GARDEN

*Imperata bifurcata*

March 7 1866

*fariniflora* Boiss *B. fariniflora*, Koch  
Charleston 1865 - H. Smith 5718 Flor Gen  
*B. congesta* 4732 '6



0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI  
BOTANICAL  
GARDEN

ALEX. LEITCH,

APPARTEMENT AND CLOTHING,  
ST. LOUIS, MO.

Marble Building, Cor. Fourth and Olive Streets,

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

OCT 6



0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI  
BOTANICAL  
GARDEN

*J. C. porius*

minutus 1-2 pollen

rami subuiniflori

Colomos & Hall 539  
part

March 10 1866



0 1 2 3 4 5 6 7 8 9 10

cm

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BOTANICAL  
GARDEN

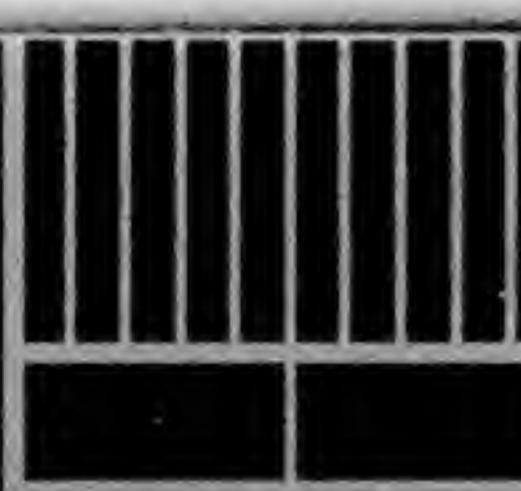
ALEX. TETTIC,  
APPAR CARRY AND CEMUS,

Marble Building, Cor. Fourth and Olive Streets,

ST. LOUIS, MO.

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

186



0  
cm

1

2

3

4

5

6

7

8

9

10

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MISSOURI  
BOTANICAL  
GARDEN

*J. confervoides*  
var. *flavescens*

Dec 11 1867

Southern Mississippi, Gulf coast.

E. H. Gilgand

May 1859

x 60



nearly smooth, shining  
even with maga 150  
only slight wrinkles, no  
regular striation recognized.



0 1 2 3 4 5 6 7 8 9 10

cm

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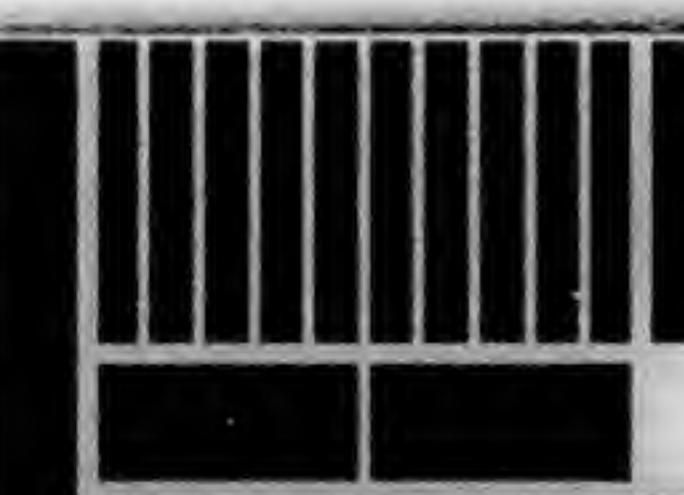
MISSOURI  
BOTANICAL  
GARDEN

ALEX. LEITCH,  
APOTHECARY & PHARMACEUTIST,

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

286b

MISSOURI BOTANICAL GARDEN  
MISSOURI BOTANICAL GARDEN PAPERS



0 1 2 3 4 5 6 7 8 9 10

cm

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BOTANICAL  
GARDEN

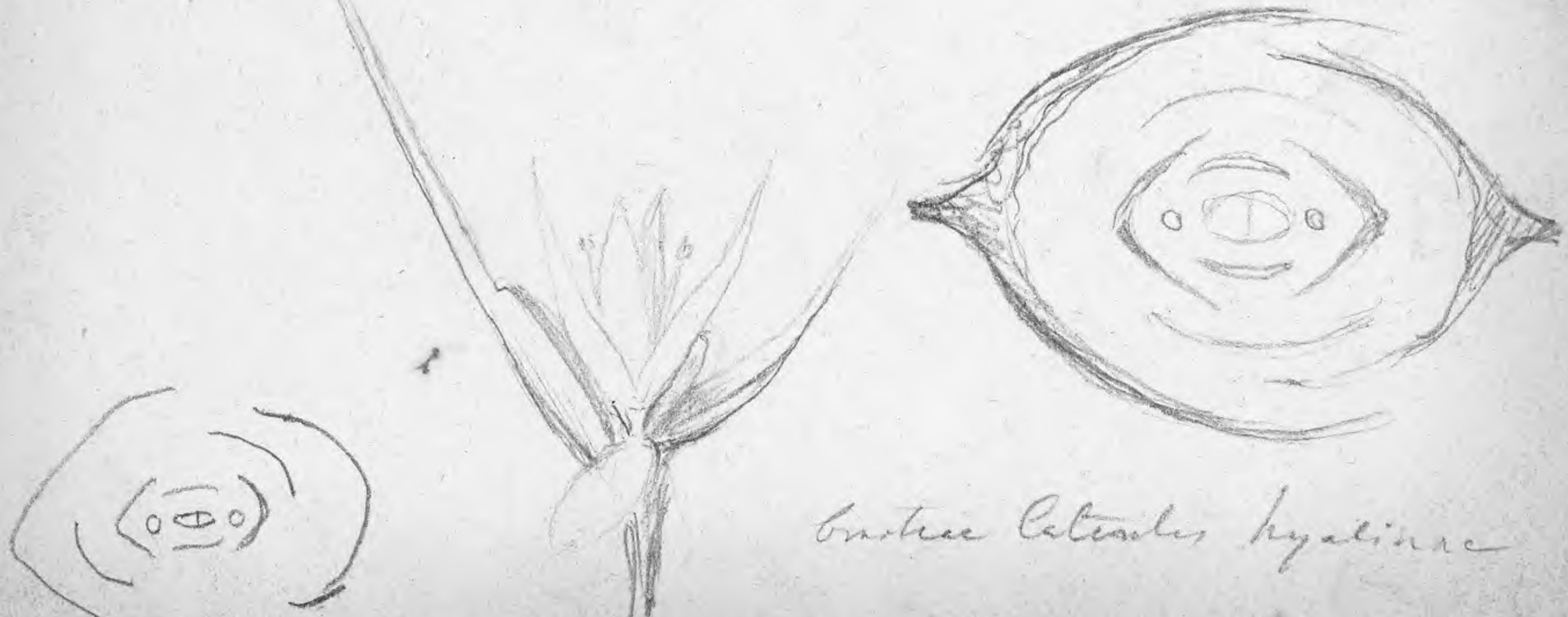
Oberlin Jun 15 1868

J. Grisebach

Domin's drawings

Schleiden 1858

Fig 46 et Braun



according to Braun's view



0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI  
BOTANICAL  
GARDEN

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

EE33



0 1 2 3 4 5 6 7 8 9 10

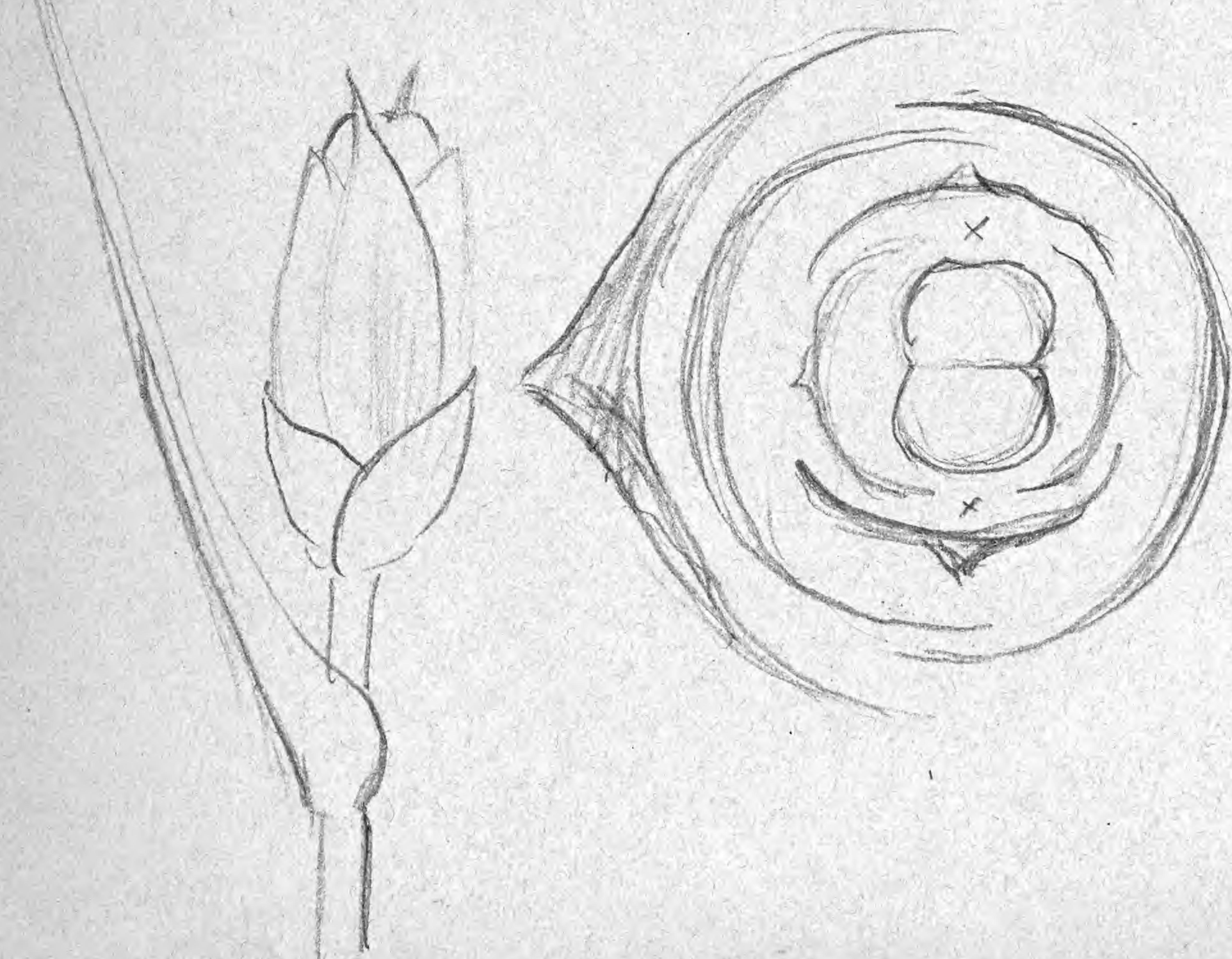
cm

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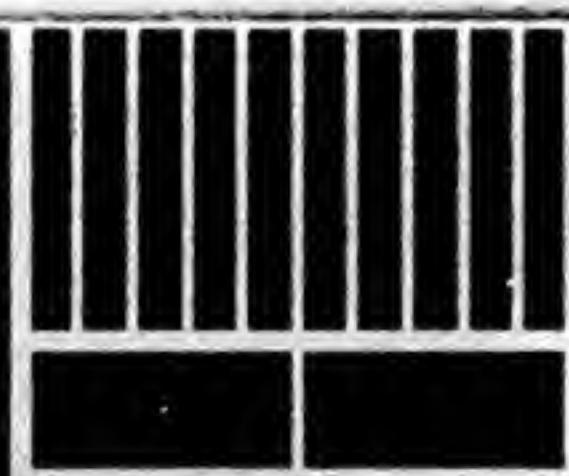


MISSOURI  
BOTANICAL  
GARDEN

*L. Bufonius dimersus*  
of Brauns letter Aug 9<sup>th</sup> 1868



There ought to be  
2 anthers, & x  
(not indicated in Brauns  
sketch)



0 1 2 3 4 5 6 7 8 9 10

cm

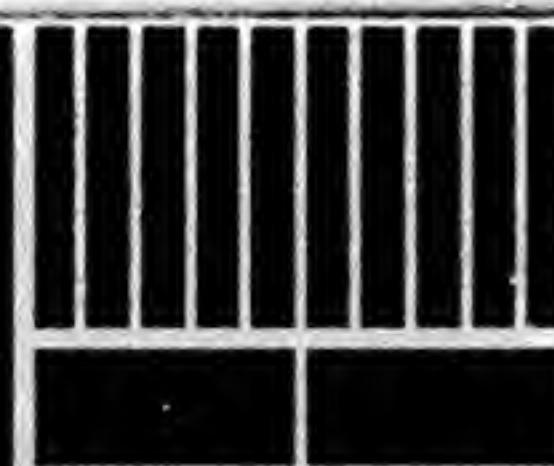
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MISSOURI  
BOTANICAL  
GARDEN

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

9234



0  
cm

1

2

3

4

5

6

7

8

9

10

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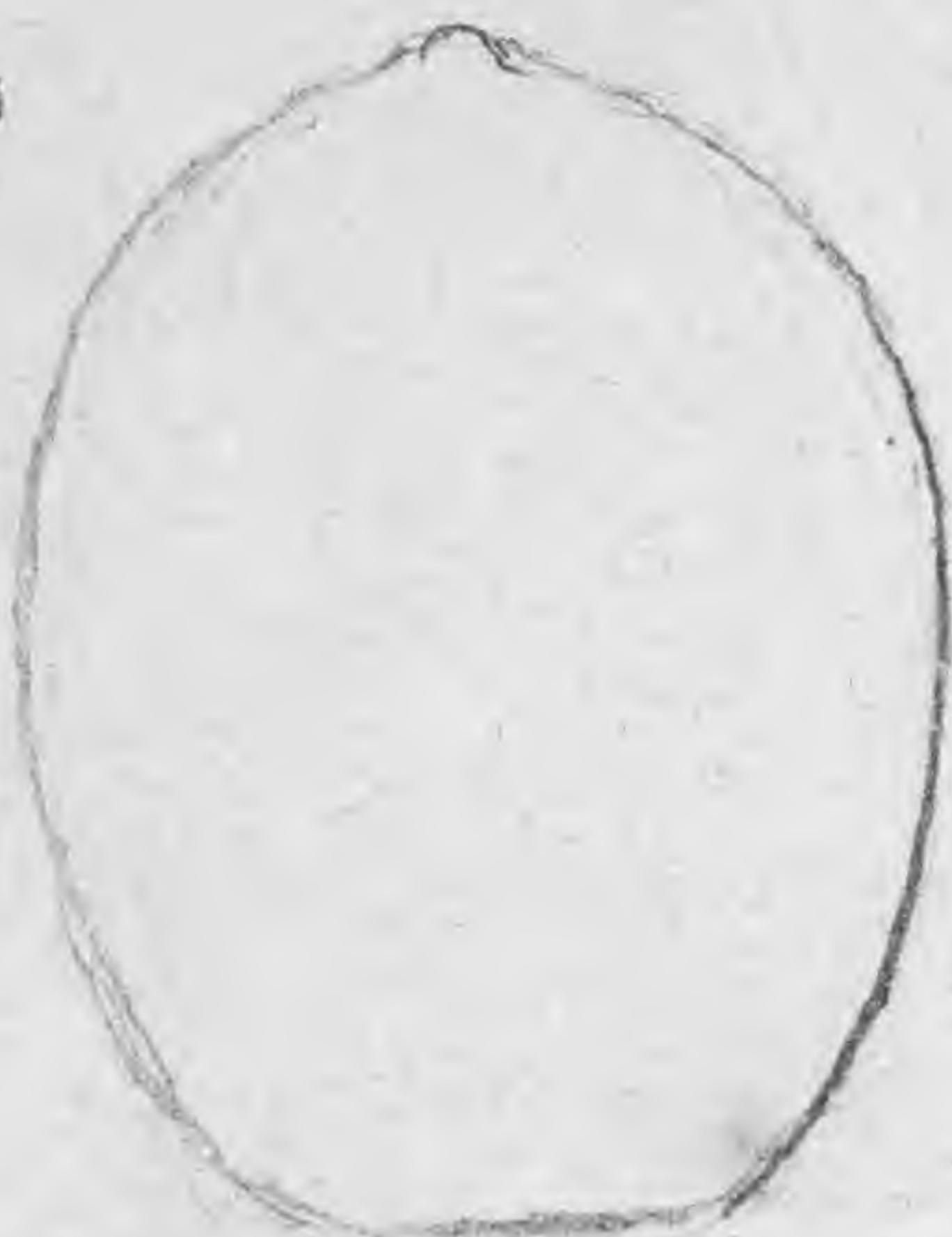


MISSOURI  
BOTANICAL  
GARDEN

*Juncaria bifolia* var.  
Sta Cruz Is., Calif. Oct 20 1881

M. A. Jones 1881

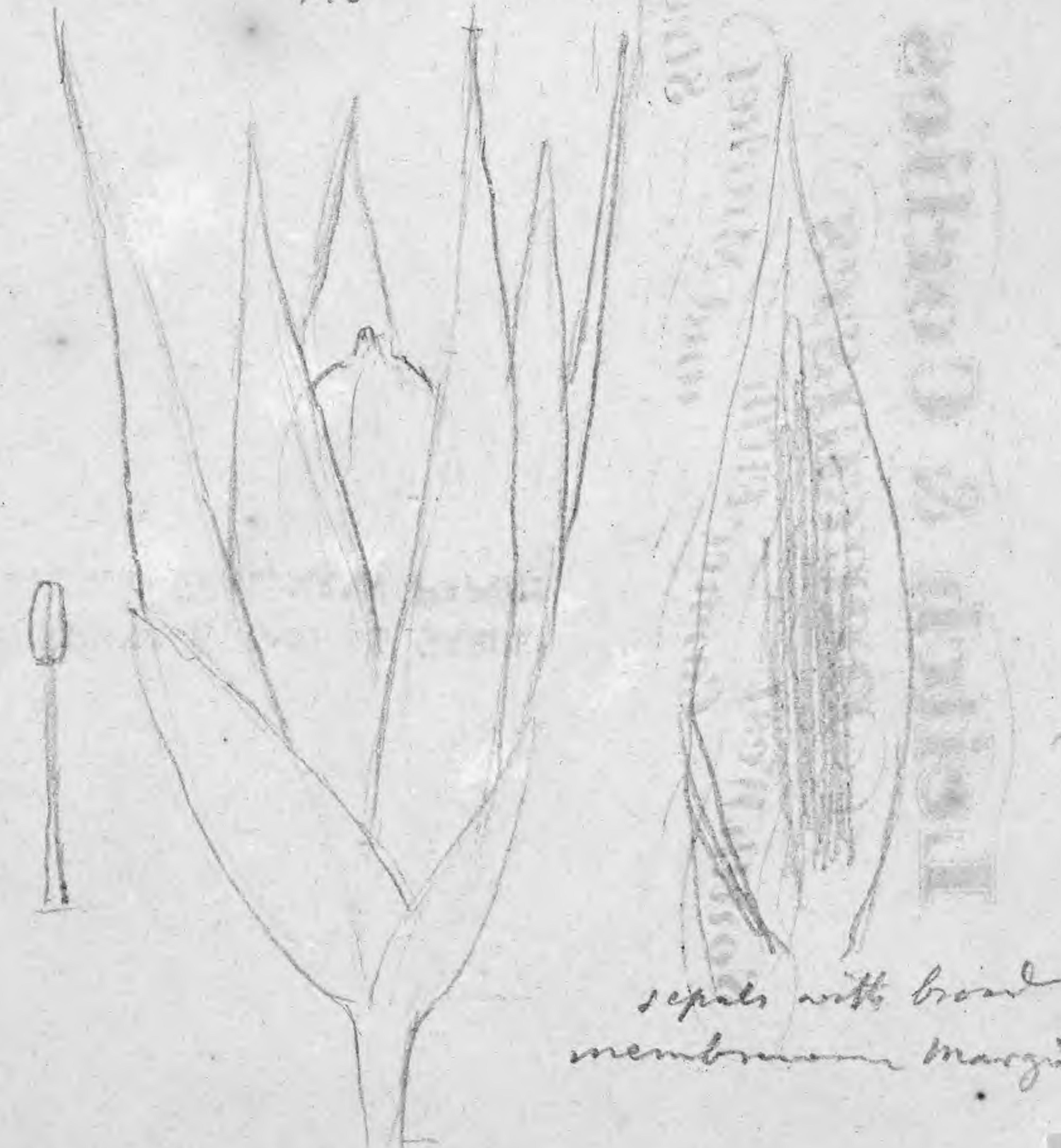
x60



x60



x10



x150  
very indistinct  
marks of seed



0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI  
BOTANICAL  
GARDEN

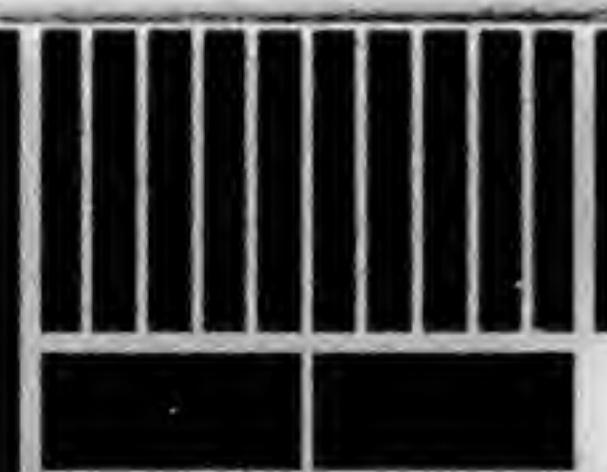
Leitch & Corlies

DRUGGISTS

South West Corner Fifth and Market Streets

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

sec 6



0 1 2 3 4 5 6 7 8 9 10  
cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

June .....	1	.....	1	.....	.....	.....	3	.....
July .....	2	.....	4	.....	.....	1	.....	3
August .....	3	.....	.....	1	.....	4	.....	2
September .....	4	.....	.....	1	.....	7	.....	8
October .....	3	.....	1	.....	1	.....	1	.....
November .....	2	.....	3	.....	7	.....	7	.....
December .....	2	.....	3	.....	.....	.....	6	.....
	50 + el.	36 + el.	23 — el.	28 — el.	15 no el.	34 no el.		

Snowing was accompanied

	By Positive Electricity.		By Negative Electricity.		By no Electricity.	
	In 1861.	In 1862.	In 1861.	In 1862.	In 1861.	In 1862.
January .....	3	.....	9	.....	2	.....
February .....	12	.....	8	.....	1	.....
March .....	3	.....	12	.....	.....	.....
October .....	.....	1	.....	.....	.....	.....
November .....	5	.....	4	.....	.....	.....
December .....	5	.....	2	.....	2	.....
	23 + el.	36 + el.	2 — el.	3 — el.	.....	1 no el.

#### REMARKS.

The monthly mean of atmospheric electricity in 1862 was not quite so regular as that in 1861. While in 1861 an un-

272



9236

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

or March, April, May and October; and the third with the lowest electricity by the months of June, July, August and September.

The aggregate monthly mean of

The first group in 1861 is	52.9	— in 1862,	54.6
The second " "	33.5	"	35.2
The third " "	14.1	"	10.5

Thus in 1861 the third group prevailed, and in 1862 the first and second. But these differences are so well balanced throughout the year, that the mean of the whole year in 1861 and in 1862 is exactly the same, namely, 8.4. Such an identity in the yearly result, even to decimals, is of course not to be expected every year; but it seems to prove, at least, that the yearly mean of electricity is as constant as that of temperature, of relative humidity, and of atmospheric pressure.

The third table, showing the daily periodicity of atmospheric electricity, confirms the daily two maxima and two minima of electricity as an undeniable fact.



0 1 2 3 4 5 6 7 8 9 10  
cm

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896 Linnaea

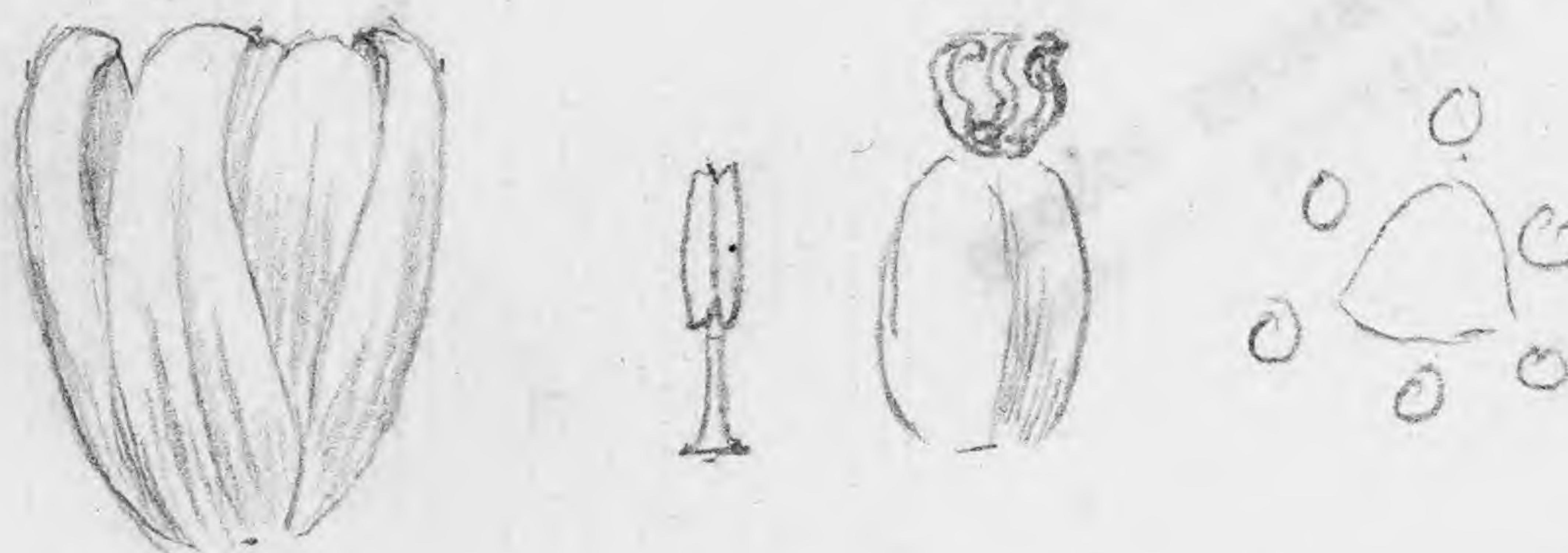
Korean Archipelago

March 23 1866

Oldham leg.

H. C. Gray

folia gramineae plane



corolla ovata obtusiloba into anthesis oblique  
aequilonga;



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